



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
[www.uspto.gov](http://www.uspto.gov)

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

09/779,691 02/07/2001 Masayuki Ishiwa SANWA1.001AUS 6764

20995 7390 07/18/2002

KNOBBE MARTENS OLSON & BEAR LLP  
620 NEWPORT CENTER DRIVE  
SIXTEENTH FLOOR  
NEWPORT BEACH, CA 92660

[REDACTED] EXAMINER

CUNEO, KAMAND

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2827

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

|                 |          |  |
|-----------------|----------|--|
| Application No. | 91779691 |  |
| Examiner        | Cuneo    |  |
| Group Art Unit  | 2827     |  |

--The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address--

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

### Status

- Responsive to communication(s) filed on 4/15/02
- This action is FINAL.
- Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

### Disposition of Claims

- Claim(s) 1-1 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- Claim(s) \_\_\_\_\_ is/are allowed.
- Claim(s) 1-1 is/are rejected.
- Claim(s) \_\_\_\_\_ is/are objected to.
- Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

### Application Papers

- See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.
- The drawing(s) filed on 2/7/01 is/are objected to by the Examiner.
- The specification is objected to by the Examiner.
- The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

- Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- All  Some\*  None of the CERTIFIED copies of the priority documents have been received.
- received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

- Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_  Interview Summary, PTO-413
- Notice of Reference(s) Cited, PTO-892  Notice of Informal Patent Application, PTO-152
- Notice of Draftsperson's Patent Drawing Review, PTO-948  Other \_\_\_\_\_

## Office Action Summary

**DETAILED ACTION**

***Drawings***

1. The drawings are objected to for the following reasons.

The figures are improperly cross hatched. All of the parts shown in section, and only those parts, must be cross hatched. The cross hatching patterns should be selected from those shown on page 600-81 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP 608.02.

Drawing corrections in compliance with MPEP 608.02(v) are required in response to this office action.

***Treatment of Claims Based on Prior Art***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Campbell (US 6012221).

Figure 2 discloses board (32), and figure 1 discloses board (10). The two boards are separated by the projections of the core of board (32) as shown in figure 3.

4. 35 USC 103(a) states:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art

to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Obviousness under 35 USC 103(a) is determined against a background established by the factual inquires set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), which are summarized in items 1-4 below.

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 USC 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 USC 103(c) and potential 35 USC 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-10 are rejected under 35 USC 103(a) as being unpatentable over Bregman et al. (US 5786986, hereafter Bregman) and Abolafia et al. (US 3795047, hereafter Abolafia).

Bregman discloses all of the elements of the claim as outlined in section 2 of the office action of 11/13/01, except for the resist with the openings. Abolafia discloses this resist as stated in section 2 of the office action of 11/13/01. It would have been obvious to one of ordinary skill in the art, at the

time the invention was made, to include the resist of Abolafia on the device of Bregman for the benefit of protecting the surface of the circuit board. Using the resist also afford the benefit of reduced processing steps if the balls are formed by masking methods. That is, the resist is used as a mask and need not be removed, thereby eliminating the additional step of removing the mask.

***Related Prior Art***

7. The following references are considered pertinent to the present application.

Appelt (6222136) and Beck disclose inner metal layers with projections. Nevertheless, the projections do not serve to separate adjacent boards.

Barrow (5889655), Feilchenfeld (5798563), Duboz (5726500), Sweitzer (5615477) and Hirata (5329068) all disclose covering the conductor layer with resist around a connecting projection.

***Response to Arguments***

8. Applicant arguments have been carefully reviewed, but are not persuasive.

Applicant argues that Bregman does not disclose integral projections. Applicant assumes that solder balls (42) are not integral projections. Integral means a complete unit or whole, Webster's II New Riverside Dictionary, 1994. The solder balls are connected to and are a piece of the entirety of the device of Bregman.

Applicant argues the deficiencies of Abolafia. These arguments are moot because Abolafia is relied upon for the teaching of the resist and not the other features applicant argues.

Applicant's last argument is that there is no reason to combine. This is not persuasive, because all of the reasons stated in the rejection are applicable to the noted combination.

The arguments on claim 11 are moot in view of the new grounds of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Closing***

10. Any inquiries related to the examination of this application should be directed to Ex. K. Cuneo at (703) 308-1233 or her supervisor SPE David L. Talbott at (703) 305-9883. Inquiries of a general nature should be directed to the receptionist of Group 2800 at (703) 308-0956. The fax numbers for Group 2800 are (703) 308-7722 and 7724.



K. Cuneo  
Primary Examiner  
July 13, 2002